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| EXAMINER | |
|---|---|
| STELLING, LUCAS A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1797 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 07/02/2008 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/574,267 | PRASAD, YANDAPALLI DURGA | |
| | Examiner | Art Unit | |
| | Lucas Stelling | 1797 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *16 March 2006 and 23 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1 and 55-77* is/are pending in the application.

4a) Of the above claim(s) *60-67* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,55-59 and 68-77* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/31/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Species A, in which the transition metal is copper, in the reply filed on 4-23-08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 60-67 drawn to the non-elected species are withdrawn from consideration. Claims 1, 55-59, and 68-77 are currently examined on the merits.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 72-74, and 77 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. As to claims 1, and 73 it is unclear what the term "varied" means in context of the claim. A person of ordinary skill in the art would not know to a reasonable degree whether the conditions are "varied" during a single production batch of the silicate, or whether the conditions are "varied" from one production batch to the next. For purposes of examination it will be interpreted that "varied between" is a range, where the condition may be varied from one production batch to the next.

6. As to claim 72, it is unclear what the term "in nature" means. A person of ordinary skill in the art would not know to a reasonable degree whether any given

location does or does not exist "in nature" for determining whether a virus is infective in it. For purposes of examination the scope of the claim will be to include any virus.

7. As to claim 73, it is unclear what is meant by the term “chemicals,” “pesticides” and “biomolecules.” These chemical genus terms do not clearly identify a set of species which would be known to a person of ordinary skill in the art to a reasonable degree.

8. As to claim 74, it is unclear what is meant by the terms “toxic metals” and “pesticides.” All metals are toxic at a high enough concentration, and the term pesticide does not define a class of compounds to a reasonable degree such that a person of ordinary skill in the art would know whether any given compound is or is not a pesticide.

9. As to claim 74, it is unclear what is meant by “a toxic chemical gas.” All chemical gasses are toxic to humans to the extent they completely displace breathable oxygen.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1 and 73 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,836,633 to Beschke (“Beschke”).

12. As to claims 1, and 73 Beschke teaches a method for controlling microbes **(col. 1 lines 18-21, antifouling is the process of controlling marine flora and fauna build-up on submerged objects and includes microbial fouling. It is noted also that microbes are composed of biomolecules as required by claim 73)**, said method

comprising contacting **(col. 1 lines 15-21, microbes in the water will contact the exterior of the ship)** the microbe with at least one functional transition metal silicate selected from the group consisting of:

13. (a) cupric silicates **(col. 3 line 69 – col. 4 line 10, the Copper content of the silicate produce is 37.6% which means that the rest of the composition is 62.4% silica having a silica to copper ratio of 62.4:37.6 or 1:0.60)** having a silica to copper ratio in the range of 1:0.34 to 1:5.15;

14. wherein said transition metal silicates are prepared by the process comprising the steps of

15. (i) adding a transition metal salt solution to a soluble alkali silicate solution to form a mixture;

16. (ii) forming a precipitate of a transition metal silicate; and

17. (iii) washing and drying the precipitate thus formed to obtain the transition metal silicate **(for steps (i), (ii), and (iii) see col. 2 lines 25-50 and col. 2 line 68-- col. 3 line 10)**,

18. wherein in step (i), the ratio between the transition metal salt solution to the alkali silicate solution is varied **(col. 2 lines 50-55)**, the temperature at which the solutions are mixed is varied between 20 to 90$^{o}$C **(col. 2 lines 28-31)**, and the pH of the medium is varied between about 2 to about 11 **(col. 2 line 68)**.

19. Claims 68- 72, and 74- 77 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Beschke.

20. As to claims 68- 72, microbes (e.g. bacteria, cryptosporidium, apergillus sps, and viruses) of these types are routinely present in natural waters, and therefore it is implicit in the teaching of the reference that the anti-fouling copper silicate agent in Beschke will contact these microbes. Alternatively, it would be obvious to use the copper silicate of Beschke in instances when the ships hulls will come in contact with these enumerated microbes in order to prevent biofouling on the ship.

21. As to claims 74-77, contaminants of these types are routinely present in natural waters, and therefore it is implicit within the teaching of the reference that the copper silicate coating for ships will contact these contaminants (e.g.. arsenic, mercury, lead, toxic metals, pesticides, bio-molecules, trihalomethanes, semi-volatile and volatile organics, PCBs, and hydrocarbons). Alternatively, it would be obvious to use the copper silicate of Beschke on ship hulls in instances when they would come in contact with natural waters containing the contaminants (e.g. arsenic, mercury, lead, toxic metals, pesticides, bio-molecules, trihalomethanes, semi-volatile and volatile organics, PCBs, and hydrocarbons) in order to prevent biofouling on the ship.

***Claim Rejections - 35 USC § 103***

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

24. Claims 55-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beschke in view of U.S. Patent No. 5,632,904 to Samad et al. ("Samad").

As to claims 55-59, each is drawn to a specific silica to copper ratio in the cupric silicate prepared under particular pH conditions. Beschke teaches that the copper content of the copper silicate produced in the Beschke method is adjustable **(Beschke col. 2 lines 50-60)**. The copper adjustment is performed by adjusting the starting pH **(col. 2 line 56)**, using an acid or base and then adding copper salt solution until the precipitation pH is reached **(col. 2 line 58)**. It is within the understanding of a person of skill in the art that the biocidal power of biocidal copper agents is controlled by the available metal cations **(Samad col. 1 lines 39-41)**. So the amount of copper in the agent is a result effective variable. And, it is within the understanding of a person of ordinary skill that the water chemistry in which the copper agent is to be used can reduce its effectiveness **(Samad col. 1 lines 34-54)**. Therefore it would have been obvious to a person of ordinary skill in the art at the time of invention to optimizes the silica to copper ratio in the adjustable copper silicate compound of Beschke by selecting either neutral, acidic, or extremely acidic pH conditions during production in order to provide an effective

amount of copper in the anti-fouling coating for the ships based on the water chemistry in which they are to be used. *Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill in the art and would have been obvious, consult In re Boesch and Slaney (205 USPQ 215 (CCPA 1980)).*

25. The electron spin resonance and X-ray diffraction peaks are inherent properties of a particular crystal structure of a silicate that is obvious and, therefore, they need not be expressly shown in the prior art.

## ***Conclusion***

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is (571)270-3725. The examiner can normally be reached on Monday through Thursday 12:00PM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew O Savage/
Primary Examiner, Art Unit 1797

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